

A systematic review of brief dietary questionnaires suitable for clinical use in the prevention and management of obesity, cardiovascular disease and type 2 diabetes

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Table 1: Tool and study characteristics

Tool name Author, date^(ref) Country	Purpose of study[¶] (number of participants)	Recruitment setting	Ethnicity	Sample characteristics (Age (years) and BMI (kg/m ²) reported as mean values (standard deviation, when available) unless otherwise indicated)	Tool characteristics (language, number of questions, portion estimates, time to complete, timescale)	Test scoring and outcome
Healthy Eating						
Australian Diet Quality Tool (DQT)	i) Validation ¹ (n=37)	i) Cardiac rehab patients	NR	i) 13.5% women; age=61.2 (10.8); BMI=28.7 (4.1)	English 13 questions (food frequency and behavioural) Portions described by household measures 11 minutes to complete Unspecified timescale	1 total score derived by summing responses Higher scores indicate more desirable habits Cut-offs used to define diets as healthy/unhealthy 5 subscale scores ('F+V' 'saturated fat' and total fat', 'omega 3s' 'fibre' and 'salt') can also be calculated by summing appropriate responses
O'Reilly (2012) ⁵⁰ Australia	ii) Acceptability ² (n=33)	ii) Health professionals (n=25), cardiac rehab patients (n=8)	NR	ii) NR		
Bailey Elderly Food Screener (B-Elder)	1) i) Item generation; validation (n=179)	1) General community	1) 99% White American	1) i) 54.7% women; age=73.0 (5.0); 80% high school education ii) "similar" gender distribution to other samples	English 25 questions (food frequency and behavioural) Portions are not described	1 total score derived by summing responses Higher scores indicate more desirable habits
1) Bailey (2007) ⁵¹ USA	ii) Acceptability (n=17)					
2) Bailey (2009) ²⁸ USA	2) Validation (n=206)	2) General community	2) 98% White American	2) 59.7% women; age=78.5 (4.0); 82.0% high school education	15 minutes to complete Diet over last month	Cut-offs used to define diets as healthy/unhealthy

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Food Behaviour Checklist (FBC) Text version (FBC-T)	1) Item generation; internal reliability; validation (n=100)	1) General community	1) 46% African American; 23% Hispanic; 21% White American; 3% Native American; 7% other	1) 100% women; age=32.9 (8.9); mean of 12 years education; low SES	English 16 questions (food frequency and behavioural) Portions are not described 10 minutes to complete Unspecified timescale	7 subscale scores are calculated ('Fruit and vegetables', 'Milk', 'fat and cholesterol', 'diet quality' and 'food security') by summing responses in that category and dividing by the number of questions Higher scores indicate more desirable habits
1) Murphy (2001) ¹⁰ USA 2) Townsend (2003) ⁵² USA	2) Item generation; test-retest; internal reliability (n=44)	2) General community	2) NR	2) Test-retest sample was a subset of validation sample; internal reliability redone		
Food Behaviour Checklist, visually enhanced version (FBC-V)	1) i) Acceptability (n=43)	1) i) General community	1) i) "English speaking, non-Hispanic black, non-Hispanic white, and Hispanic clients"	1) i) 84% women; low SES	English Includes photographs 16 questions (food frequency and behavioural) Portions are not described No completion time estimated Unspecified timescale	As FBC-T
1) Townsend (2008) ⁴³ USA	ii) Acceptability (n=15)	ii) University; work site	ii) Academic nutrition staff ('professionals') (n=6); Nutrition educators ('paraprofessionals') (n=10)	ii) No details		

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Spanish translation of FBC-V (FBC-SV)	2) Acceptability (n=20)	2) General community	2) 95% Hispanic	2) n=20 (100% women) (face validity)	Spanish (USA) translation of FBC-V	As FBC-T
2) Banna (2010) ³² USA	3) i) Test-retest (n=71) ii) Validation (n=82)	3) General community	3) Hispanic	3) i) 100% women; low income		
3) Banna (2011) ⁴⁴ USA	iii) Internal reliability (n=153)			ii) 100% women; age=36; BMI=31.1 (6.7); low income		
				iii) Validation and reliability sample combined for internal reliability		
Healthy Eating Vital Signs (HEVS)	1) i) Acceptability (n=48) ii) Validation (n=261)	1) Primary care	1) i) 79% White American ii) 80% White American	1) i) 55.4% women); age=42.6 (12.1) ii) 58.2% women; age=38.4 (11.7); BMI=27.7 (7.2); mean number of years of schooling = 15.7 (3.4)	English 14 questions (food frequency and behavioural) Soft drink portions described as cans	Individual answers are considered separately and no scores are calculated
1) Greenwood (2008) ⁸ USA						
2) Greenwood (2012) ⁵³ USA	2) Validation; internal reliability (n=60)	2) Primary care clinic staff	2) 54% White American; 25% Hispanic	2) 93.3% women; age=38.3 (9.6); 68% BMI>25; 100% > high school education	1 minute to complete Both 1 day recall (yesterday) and typical recall with no timescale	

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Latino Dietary Behaviors Questionnaire (LDBQ) ^t Fernandez (2011) ⁵⁴ USA	Item generation; internal reliability; validation (n=252)	Primary care	100% Hispanic	76.6% women; age=55.2 (11.2); BMI=34.8 (7.0); about 75% < high school education; 50% household income <\$10,000	Spanish (USA and Central America) 13 questions (food frequency and behavioural) Portions are not described No completion time estimated Unspecified timescale	1 total score derived by summing responses Higher scores indicate more desirable habits
PrimeScreen Rifas-Shirman (2001) ⁵⁵ USA	Test-retest; validation; acceptability (n=160)	Primary care	63% White American, 31% African American	56.9% women; age=48.0 (range, 19-65); BMI=27.3 (range, 15.5-57.7); 59% college graduates; 59% executive or professional	English 15 food-based questions (food frequency and behavioural) + 8 questions on vitamin / mineral supplements Portions are not described 5 minutes to complete Diet over last year	In clinic individual answers are coded using traffic light codes (red, yellow, green) for food items (It is possible to calculate nutrient intakes for research purposes but this requires population specific nutrient and food consumption databases)

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Rapid Eating Assessment for Patients (REAP) Gans (2006) ²⁹ USA	i) Acceptability (n=61) ii) Validation (n=44) iii) Acceptability (n=31) iv) Test-retest; validation (n=94)	i) Physicians and medical students ii) Undergraduates iii) Work site; students iv) General community	i) NR ii) NR iii) 50% ‘people of colour’ iv) 94% White American	i) NR ii) NR iii) 62% female; age=32 (range, 20-60); 96% some college education; 76% household income < \$76,000 iv) 57.4% women; age=43.2 (12.5) ; 57% completed high school; median income range \$51,000-\$60,000	English 31 questions (behavioural) Portions described by weight 10 minutes to complete Unspecified timescale	In clinic individual answers are considered separately and a “physician key” is provided to guide discussion and advice
Rapid Eating Assessment for Patients short form (REAP-S) Segal-Isaacson (2004) ¹⁴ USA	Validation (n=49)	Undergraduates	65% White American, 21% Asian	44.5% women; age=24.2 (3.8); BMI=23.4 (5.0); some college	English 16 questions (behavioural) Portions described by weight No completion time estimated Unspecified timescale	As REAP
Short Diet Quality Screener (sDQS) Schroder (2012) ¹³ Spain	Validation (n=102)	General community	NR	n=102 (49% women); age=58.6 (12.1); BMI=27.6 (4.2); 62.7% > primary school education	Spanish (European) 18 questions (food frequency) Portions described in household measures No completion time estimated Diet over last year	1 total score derived by summing responses Higher scores indicate greater adherence to healthy eating

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Mediterranean Diet						
Brief Mediterranean Diet Screener [†] (bMDSC)	Developed in the same population as the sDQS				Spanish (European)	1 total score derived by summing responses
Schroder (2012) ¹³					15 questions (food frequency)	Higher scores indicate greater adherence to Mediterranean diet
Spain					Portions described in household measures	
					No completion time estimated	
					Diet over last year	
Mediterranean Diet Adherence Score [†] (MEDAS)	Validation (n=7146)	Primary care	NR	57.2% women; age=67; BMI=30	Spanish (European)	1 total score derived by summing responses
Schroder (2011) ⁵⁶					14 questions (food frequency and behavioural)	Higher scores indicate greater adherence to Mediterranean diet
Spain					Portions described in household measures	
					No completion time estimated	
					Unspecified timescale	
Total fat						
Dutch fat consumption questionnaire [†] (D-Fat1)	i) Test-retest (n=639)	General community	NR	i) 52.1%; age range=18-93	Dutch	1 total score derived by summing responses
	ii) Validation (n=52)			ii) 55.8% women; age range=21-68	25 questions (food frequency and behavioural)	Lower scores indicate lower fat diet
Van Assema (1992) ⁵⁷					Portions described in household measures	
Netherlands					No completion time estimated	
					Diet over last 6 months	

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Fat-Related Diet Habits Questionnaire / Kristal's Food Habits Questionnaire (FRDHQ) 20 item version 1) Kristal (1990) ¹¹ USA 2) Birkett (1995) ⁴⁶ Canada 3) Glasgow (1996) ²¹ USA 24 item version 4) Spoon (2002) ⁴⁷ USA	1) Test-retest; internal reliability; validation (n=97) 2) Internal reliability; validation (n=354) 3) i) Validation (n=1022) ii) Validation (n=105) iii) Test-retest (n=89 / 39) 4) i) Internal reliability (n=178) ii) Test-retest (n=42) iii) Validation (n=32)	1) Primary care 2) Work site 3) i) Work site ii) Primary care 4) Work site	1) NR 2) NR 3) NR 4) 82% White American	1) 100% women; age=51.5 (4.3); BMI=24.5 (3.5); 60.0% completed college; 57.2% household income >\$40,000 2) 100% men; age=41.0 (9.8); BMI=28.5 (4.4); 100% manual workers; mean number of years education=12.4 (3.3); 56.9% household income > CA\$40,000 3) i) "majority blue collar" ii) 60% women; age=63 iii) Test-retest samples were subsets of validation sample 4) i) 40.0% women; age=40.7 (10.6); BMI=27.1 (27.1); 24% completed college; 29% < \$12,000 ii) Test-retest sample was a subset of internal reliability sample iii) Validation was a different subset of internal reliability sample	English 20 /25 questions (behavioural) Interview administered and self- administered versions of both older 20 item and newer 25 item available Portions are not described No completion time estimated Diet over last month	1 total score derived by summing responses 5 behavioural subscales can be calculated by summing responses in that category and dividing by the number of questions Lower scores indicate lower fat habits

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Short Fat Questionnaire (SFQ) Dobson (1993) ⁵⁶ Australia	i) Acceptability ii) Validation (n=90) iii) Test-retest (n=25)	NR ii) General community; work site	NR	i) NR ii) NR iii) Test-retest sample is a subset of the validation sample	English 17 questions (food frequency and behavioural) Portions are not described 3 minutes to complete Unspecified timescale	1 total score derived by summing responses Lower scores indicate lower fat diet
Sister Talk Food Habits (short form) (SisterTalk-S) Anderson (2007) ³ USA	Internal reliability; validation (n=95)	Primary care	100% African American	100% women (49 participants completed Sister Talk at phase 1 and 2 but test-retest not calculated)	English 30 questions (food frequency) Portions are not described No completion time estimate Diet over the last 3 months	1 total score derived by summing responses then dividing by the number of non-missing questions Lower scores indicate lower fat habits
Starting the Conversation (STC) Paxton (2011) ³⁹ USA	i) Validation; internal reliability (n=372) ii) Test-retest (n=114)	Primary care	NR	i) 49.7% women; age=58.4 (9.2); BMI=34.8 (6.5); 19.1% high school or less; 47.3% household income <\$49,999 ii) Test-retest was a subsample of validation study	English 8 questions (food frequency and behavioural) Portions are not described No completion time estimate Diet over the “past few months”	1 total score derived by summing responses Lower scores indicate more desirable habits

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Specific dietary fats and / or dietary cholesterol						
Dietary Fat Quality Assessment (DFA)	i) Validation (n=120)	Primary care	51% White American; 48% African American	i) 100% women; age=51.0 (0.7); BMI=38 (0.4); 65% low SES; 60% high school education or less	English 20 questions (food frequency)	1 total score derived by summing responses
Kraschnewski (2013) ⁶⁰ USA	ii) Test-retest (n=96)			ii) Test-retest sample was a subset of the validation sample	Portions described as undefined 'servings' 6 minutes to complete Unspecified timescale	Higher scores indicate lower fat diet
Heart Disease Prevention Project Screener (HDPPS)	i) Test-retest (n=22)	Work site	NR	i) 100% men	English 10 questions (food frequency and behavioural)	1 total score derived by summing responses
Heller (1981) ⁶¹ UK	ii) Validation (n=68)			ii) 100% men	Portions described by weight No completion time estimate Unspecified timescale	Lower scores indicate lower fat diets

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MEDFICTS (Meats, Eggs, Dairy, Fried foods, fat In baked goods, Convenience foods, fats added at the Table and Snacks)	1) i) Validation (n=22) ii) Validation (n=26) iii) Validation (n=16)	1) i) Primary care ii) Primary care iii) Pre-existing food diaries	1) NR	1) i) NR ii) NR iii) NR	English 20 questions (food frequency) Portions described by weight and people are asked to indicate 'small', 'medium' or 'large' servings	1 total score derived by summing responses Lower scores indicate greater adherence to diet Cut-offs used to define diets as adherent / non adherent
1) Kris-Etherton (2001) ¹²	2) Validation (n=164)	2) Armed forces	2) 65.9% White American	2) 20.1% women; age=42.0 (2.0); BMI=27.0 (4.0)78.4% college educated	No completion time estimated	
2) Taylor (2003) ⁶²	3) Validation (n=184)	3) Primary care	3) 100% African American	3) n=184 (100% women); age=36.7 (5.3); BMI=30.7 (6.9)	Unspecified timescale	
3) Teal (2007) ⁶³						
4) Mochari (2008) ⁶⁴ USA	4) Validation (n=501)	4) Primary care	4) 64.4% White American; 24% Hispanic	4) 65.9% women; 96.4% high school or greater		
NLSChol Questionnaire [†]	i) Acceptability (n=131)	Primary care	NR	i) 45% women); age=60.9 (15.5); BMI=26.9 (6.5)	French 11 questions (food frequency)	1 total score derived by summing responses
Beliard (2012) ⁵⁸ France	ii) Test-retest (n=20) iii) Validation (n=58) iv) Internal reliability (n=1048)			ii) NR iii) 39.7% women; age=58.0 (16.0); BMI=27.0 (8.0) iv) 56.9% women; age=56.0 (12.0)	Portions described by weight 5 minutes to complete Unspecified timescale	Lower scores indicate greater adherence to diet Cut-offs used to define diets as adherent / non adherent

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Northwest Lipid Research Clinic Fat Intake Score (NWFIS) Retzlaff (1997) ²⁰ USA	Test-retest; validation (n=310)	Work site	90% White American	37.4% women); age=42.3; BMI=27.7; 95.5% high school or greater	English 12 questions (food frequency and behavioural) Portions described by weight 3 minutes to complete Diet over the last month	1 total score derived by summing responses Lower scores indicate lower fat diet Cut offs used to define diets as high / low in fat and cholesterol
Rate Your Plate (RYP) Gans (1993) ¹⁵ USA	Validation (n=102)	Primary care	23.5% Portuguese heritage	57.8% women); age=38.1 (13.1); BMI=26.5 (5.9); 83.3% completed high school	English 23 questions (food frequency and behavioural) Portions described by weight No completion time estimated Unspecified timescale	1 total score derived by summing responses Higher scores indicate healthier choices Cut-offs used to define diets as healthy/unhealthy
Total and saturated fat and free sugar						
Dietary Fat and Free Sugar Short Questionnaire (DFFQA) Francis (2013) ⁶⁹ Australia	i) Validation; internal reliability (n=40) ii) Test-retest (n=29)	Undergraduates	75% Australian	i) 60% women; age=21.3 (5.8); BMI=23.4 (3.4); 100% > high school education ii) Test-retest sample was a subset of validation sample: 62% women	English 26 questions (food frequency) Portions are not described 5 minutes to complete Unspecified timescale	1 total score derived by summing responses 3 subscales can be calculated by summing responses for that category Lower scores indicate lower sugar / fat Suggested cut-off used to define diets as high/low in undesirable foods

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Dietary fats and fibre						
Dietary Instrument for Nutrition Education (DINE)	Validation (n=206)	Work site	“majority white”	38% women; age=44.8 (range, 17-62); BMI=25.7; 66% skilled manual workers	English 29 questions (food frequency) Portions described by household measures, volumes and undefined ‘servings’ 5 – 10 minutes to complete Unspecified timescale	3 subscale scores (‘total fat’, ‘total fibre’, ‘unsaturated fat’) are derived by summing relevant items Lower scores for fat and unsaturated fat indicate low fat diet Higher scores for fibre indicate high fibre diet Cut-offs used to identify diets as high / low in fat / fibre
Roe (1994) ⁵ UK						
Fat and Fibre Barometer (FFB)	i) Test-retest (n=115)	General community/work site	NR	i) 47.8% women; higher than average education	English 20 questions (food frequency and behavioural) Portions described by household measures or undescribed 10 minutes to complete Unspecified timescale	1 total score derived by summing responses Higher scores indicate lower fat / higher fibre diet People are encouraged to consider changes in questions where they scored 3 or less
Wright (2000) ⁹ Australia	ii) Validation (n=98)			ii) Validation sample was a subset of test-retest sample; 52.0% women		

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Fat and Fibre Diet Behaviour Questionnaire (FFDBQ) ¹⁸ Shannon (1997) USA	i) Item generation (n ≥200) ii) Validation (n=1795) iii) Test-retest (n=943)	i) “Convenience samples” ii) Primary care	i) NR ii) 93% White American	i) 1 focus group and 2 convenience samples of approximately 100 each; ii) 68.0% women; age = 51.0; 50% college educated iii) Test-retest sample was a subset of validation sample	English 29 questions (behavioural) Portions are not described No completion time estimated Diet over the last 3 months	Total fat score derived by summing relevant responses 5 fat subscale scores can also be calculated Lower scores for fat indicate lower fat diet Total fibre score derived by summing relevant responses 3 fibre subscale scores can also be calculated Higher scores for fibre indicate higher fibre diet
Norwegian SmartDiet Questionnaire [†] (N- Smart) Svilaas (2002) ⁷ Norway	i) Test-retest; acceptability (n=111) ii) Validation (n=101)	Primary care; work site	NR	i) 60.4% women; age=51 (range, 28-52); BMI=26.5 (4.8) ii) Validation study was a subsample of the test-retest sample; 61.4% women	Norwegian 15 questions (food frequency and behavioural) Portions described by weight 9 minutes to complete Unspecified timescale	1 total score derived by summing responses Lower scores indicate less healthy choices Cut-offs used to define diets as healthy/unhealthy

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Total fat and fruit and vegetables						
Block Fat, Fruit and Vegetable Screeners (B-F&FV) (These questionnaires can be used separately)	Validation (n=208)	Work site	65% White American; 22% Asian/ Pacific Islander; 7% Hispanic; 3% African American	64.4% women; age=41	English 17 questions on fat (food frequency) 7 questions on fruit and vegetables (food frequency) Portions are not described 5 minutes to complete Diet over the last year	Fat and fruit and vegetable subscale scores derived by summing relevant items Lower scores for fat indicate lower fat diet Higher scores for fruit and vegetables indicate higher consumption Cut-offs used to identify diets as high / low in fat / fruit and vegetables
Block (2000) ⁶ USA						
Hispanic Fat and Fruit and Vegetable Screeners (H-F&FV) (These questionnaires can be used separately)	i) Item generation (n=70) ii) Acceptability (n='almost' 300)	General community	100% Hispanic ("primarily" Mexican and Mexican Americans; 91% born in Mexico)	i) NR ii) 51.0% women; 38% aged <30years; 42% < eighth grade education ii) 58.0% women; age=36.5 (14.5)	Spanish (USA and Central America) 16 questions on fat (food frequency) 7 questions on fruit and vegetables (food frequency) Portions are not described 5 minutes to complete Diet over the last months	Fat screener 1 total score derived by summing responses Lower scores indicate lower fat diets Cut-offs used to identify diets as high/low fat Fruit and vegetable screener Estimated number of fruit and vegetables/day calculated by summing responses and dividing by 7
Wakimoto (2006) ⁴² USA	ii) Test-retest (n=93)					

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Fruit and / or vegetables						
Canadian Fruit and Veg Questionnaire (CFV-Q) ^t Godin (2008) ⁶⁶ Canada	Validation (n=350)	General community	NR	56.2% women; age=37.2 (11.5); BMI=27.7 (5.6)	French 6 questions (food frequency) Portions described as cups / volumes No completion time estimated Diet over the last week	Estimated number of fruit and vegetables/day calculated by summing servings per week and dividing by 7
Dutch fruit and vegetable questionnaire ^t (D-F&V) Bogers (2004) ¹⁹ Netherlands	i) Validation (n=157) ii) Test-retest (n=73)	General community	NR	i) 100% women; age=41.0 (range, 29-40); BMI=24.0 (range, 18.7-35.9); 95% intermediate to high education level ii) Test-retest sample was a subset of the validation sample	Dutch 8 questions (food frequency) Portions described by household measures 2 minute completion time Diet over the last month	Estimated number of fruit and vegetables/day calculated by summing responses and dividing by 7
Five a day screener (5-F&V) 1) Thompson (2000) ¹⁷ 2) Kristal (2000) ⁶⁷ USA	1) Validation (n=436) 2) Validation (n=260)	1) General community 2) Work site	1) NR 2) 89% White American	1) 53.0% women; aged >50 2) 56.9% women; age=42.0 (range, 20-67); 55% had 16 or more years of education	English 7 questions (food frequency) Portions are not described No completion time estimated Diet over the last month	Estimated number of fruit and vegetables/day calculated by summing responses

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Tool name Author, date^(ref) Country	Purpose of study[¶] (number of participants)	Recruitment setting	Ethnicity	Sample characteristics (Age (years) and BMI (kg/m ²) reported as mean values (standard deviation, when available) unless otherwise indicated)	Tool characteristics (language, number of questions, portion estimates, time to complete, timescale)	Test scoring and outcome
Mainvil Fruit Habits Questionnaire (M- FrHQ) Mainvil (2011) ⁶⁸ New Zealand	Validation (n=100)	Unemployment training programme	80% European or Other ethnicity; 11% Maori; 9% Pacific, Asian, Middle Eastern, Latin American, African	50% women; age=38.1 (8.1); 45% < high school education; low SES	English 5 questions (food frequency) Portions are not described No completion time estimated Diet over the last month	Estimated number of servings of fruit per day calculated by summing responses
Short Dutch questionnaire to measure fruit and vegetables [†] (SD- F&V) Van Assema (2002) ¹⁶ Netherlands	Validation (n=49)	General community	NR	51.0% women; age=45 (range, 21-68); 50% 'low level of education'	Dutch 10 questions (food frequency) Portions are described by household measures No completion time estimated Unspecified timescale	Estimated number of fruit and vegetables/day calculated by summing responses and dividing by 7

NR=Not reported

¹ Validation = calibration against a reference measure² Acceptability encompasses face validity, clarity and ease of use[†] Translated into English[¶] Roman numerals indicate where different samples or sub-samples were used during different phases of tool development

